Amendments to the claims

The following listing of claims replaces all prior listings.

1. (Previously presented) A device for holding a substance library carrier, comprising two holding elements that are fixable with each other, and that hold a layer composite comprising:

(i) a solid lid element having a detection surface with a substance library on its underneath side and being optically translucent at least in an area of the detection surface,

(ii) a sealing intermediate element having an enclosed recess; and

(iii) a solid base element being optically translucent at least in an area of the detection surface of the lid element;

wherein the lid element, the intermediate element and the base element are held together between the two fixed holding elements to form a closed optically translucent chamber having a chamber space, the volume of the chamber space being coextensive with the volume of the enclosed recess.

2. (Original) A device according to claim 1, wherein the base element comprises an integrated heating-temperature sensor device.

3. (Original) A device according to claim 1, wherein the base element comprises Borofloat 33, silica glass, monocrystalline CaF_2 and/or monocrystalline silicon.

4. (Original) A device according to claim 1, wherein the lid element comprises glass, Borofloat 33, quartz glass, monocrystalline CaF_2, monocrystalline silicon, phenylmethylmethacrylate and/or polycarbonate.

5. (Original) A device according to claim 1, wherein the intermediate element is elastic and can be repeatedly punctured from the side by cannulae, and that the chamber space remains

sealingly closed upon extraction of the cannulae.

6. (Original) A device according to claim 1, wherein the intermediate element comprises polydimethyl siloxane, natural rubber, butadiene rubber, chloroprene rubber, nitrile butadiene rubber, butyl rubber, isoprene-styrene rubber, polynorbornene rubber, ethylene-proplyene rubber, fluor rubber, perfluor rubber, methyl-phenyl-silicon rubber, methyl-vinyl-silicon rubber, methyl-fluor-silicon rubber, fluor-silicon rubber, polysulfid rubber, urethane rubber, polyester or polyether prepolymers on the basis of 4,4'-methylenedi(phenylisothiocyanate) or toluenediisocyanate.

7. (Original) A device according to claim 1, wherein the recess defines a geometrical form of the chamber space.

8. (Original) A device according to claim 1, wherein the chamber space may be filled free of air bubbles.

9. (Original) A device according to claim 1, wherein the chamber space is formed in the shape of a D, a new moon, or a sickle.

10. (Original) A device according to claim 1, wherein the chamber may be cooled.

11. (Original) A device according to claim 1, wherein the two holding elements are half shells engaging with one another and which are held together by press-fit when pressed together.

12. (Original) A device according to claim 1, wherein the holding elements each comprise channels for cooling the chamber.

13. (Original) A device according to claim 1, wherein the holding elements each comprise a recess for receiving a slide or lug for loading the sample chamber.

14. (Original) A device according to claim 13, further comprising a media connection for heating the chamber, and a media connection for cooling the chamber, and a recess for receiving an injection apparatus, and wherein the media connections and the recesses are located on one side of the device.

15. (Original) A device according to claim 1, which is attached to a connector.

16. (Original) A device according to claim 15, which may be operated fully automatically through the connector.

17. (Original) A device according to claim 1, which is attached to a manual filling station.

18. (Original) A device according to claim 1, which contains a protein library.

19. (Original) A device according to claim 18, wherein the protein library is an antibody library, a receptor protein library or a membrane protein library.

20. (Original) A device according to claim 1, which contains a peptide library.

21. (Original) A device according to claim 20, wherein the peptide library is a receptor ligand library, a library of pharmacologically active peptides or a library of peptide hormones.

22. (Original) A device according to claim 1, which contains a nucleic acid library.

23. (Original) A device according to claim 22, wherein the nucleic acid library is a DNA molecule library.

24. (Original) A device according to claim 22, wherein the nucleic acid library is an RNA molecule library.

25. (Withdrawn) A method of carrying out a microarray-based test, comprising (a) providing a device according to claim 1, wherein the substance library contains a microarray having fixed thereon probes that bind a target molecule; (b) introducing a sample suspected of containing the target molecule into the device; and (c) detecting presence or amount of interaction between the probes and the target molecule.

26. (Withdrawn) A method according to claim 25, wherein the substance library contains a protein library.

27. (Withdrawn) A method according to claim 26, wherein the protein library is an antibody library, a receptor protein library or a membrane protein library.

28. (Withdrawn) A method according to claim 26, wherein the sample contains nucleic acids.

29. (Withdrawn) A method according to claim 26, wherein the sample contains proteins.

30. (Withdrawn) A method according to claim 25, wherein the substance library contains a peptide library.

31. (Withdrawn) A method according to claim 28, wherein the peptide library is a receptor ligand library, a library of pharmacologically active peptides or a library of peptide hormones.

32. (Withdrawn) A method according to claim 25, wherein the substance library contains a nucleic acid library.

33. (Withdrawn) A method according to claim 32, wherein the sample contains nucleic acids.

34. (Withdrawn) A method according to claim 33, wherein the nucleic acids are obtained from an organism.

35. (Withdrawn) A method according to claim 33, wherein the nucleic acids are obtained from a cell.

36. (Withdrawn) A method according to claim 33, wherein the nucleic acids are obtained from a microorganism.

37. (Withdrawn) A method according to claim 36, wherein the microorganism is pathogenic.

38. (Withdrawn) A method according to claim 32, wherein the nucleic acid library is an RNA molecule library.

39. (Withdrawn) A method according to claim 32, wherein the nucleic acid library is an DNA molecule library.

40. (Withdrawn) A method according to claim 33, wherein said sample comprises a polymerase chain reaction (PCR) mixture comprising said nucleic acid, at least one primer, nucleotides and a polymerase, such that said nucleic acids also undergo amplification via PCR.

41. (Withdrawn) A method according to claim 40, wherein said PCR mixture comprises two primers, one of which is fluorescently labeled.

42. (Withdrawn) A method according to claim 33, wherein said nucleic acids also undergo a ligase chain reaction (LCR).

43. (Withdrawn) A method according to claim 33, wherein said nucleic acids also undergo a ligase detection reaction (LDR).

44. (Previously presented) A first device for filling a second device for holding a substance library carrier, wherein the second device comprises two holding elements that are fixable with each other, and that hold a layer composite comprising:

(i) a solid lid element having a detection surface with a substance library on its underneath side and being optically translucent at least in an area of the detection surface,

(ii) a sealing intermediate element having an enclosed recess; and

(iii) a solid base element being optically translucent at least in an area of the detection surface of the lid element;

wherein the lid element, the intermediate element and the base element are held together between the two fixed holding elements to form optically translucent chamber having a chamber space, the volume of the chamber space being coextensive with the volume of the enclosed recess, and

wherein the first device comprises a body and a cover fixable to the body, wherein the body contains recesses for a filling unit, a ventilation unit and the second device, and wherein the recesses are arranged such that the sample chamber of the second device is loaded and vented by puncturing the intermediate element from its side.

45. (Original) A device according to claim 44, wherein the filling unit comprises a syringe with a first cannula, and wherein the ventilation unit comprises a second cannula.

46. (Previously presented) The device of claim 1, wherein the chamber space accessible only by puncturing the intermediate element.

47. (Previously presented) A device for holding a substance library carrier, comprising two holding elements that are fixable with each other, and that hold a replaceable layer composite defining a reaction volume and comprising:

a solid top element having an optically translucent region with an array immobilized on a reaction-volume-facing surface of the optically translucent region;

a solid bottom element opposed to the top element, and having an optically translucent region;

a sealing intermediate element including:

a first sealing surface arranged to form a liquid-tight seal when pressed against the reaction-volume-facing surface of the top element;

a second sealing surface arranged to form a liquid-tight seal when pressed against a reaction-volume-facing surface of the bottom element;

a continuous wall having:

a first thickness between the first and second sealing surfaces, the first thickness defining a displacement distance between the top element and the bottom element;

a second thickness, perpendicular to the first thickness, the second thickness defining (i) lateral external dimensions of the sealing intermediate element and (ii) a predetermined interior shape of, and interior dimensions of, the reaction volume.

48. (Previously presented) The device of claim 47, wherein the second thickness comprises a material selected to be repeatedly punctured by a cannula and remaining sealingly closed upon extraction of the cannula.

49. (Previously presented) The device of claim 47, wherein no fluid transfer into or out of the reaction volume is possible except when the second thickness is punctured by the cannula.